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09/872,330	06/01/2001	Masahiro Kuwabara	12894-006001/56494-US-TO	2893

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EXAMINER	
GREY, CHRISTOPHER P	
ART UNIT	**PAPER NUMBER**
2667	

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/872,330	KUWABARA ET AL.
	Examin r	Art Unit
	Christopher P Grey	2667

-- The MAILING DATE of this communication app ars on the cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

1. Responsive to the amendment received on June 13, 2005, amended claims 1, 3, 4 and 6 are entered as requested. Also, claim 2 is cancelled as requested. New claims 13 and 14 are entered as requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US Pub No. 2003/0058786) in view of Bickford et al. (US 4083009) in further view of Wright (US 5809083) in further view of Todd (US 6002672).

<u>Claim 1</u> Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. In each branch, Sato discloses a transformer (FFT processor) for transforming the signal into the frequency spectrum (Fig 1 elements 7-9 and line [0056]). Sato also discloses a distortion compensator (phase adjuster) that adjusts the phase of the incoming signal (Fig 1 elements 16-18 and line [0085]). Sato discloses a demodulator (fig 1 element 20). Sato does not

specifically disclose the antennas being a vertical and horizontal polarization antenna, and Sato does not specifically disclose pilot signals.

Sato discloses synthesizers (fig 2 elements 41-43) that synthesize the amplitude or power of each branch and outputs these values to a comparator and selector. Based on the comparison made in the comparator, the branch with the maximum synthesized power is selected by the selector (lines [0065-0066]. This frequency spectrum selected is output from the selector to the demodulator, where it is then possibly re-modulated and input into a number of possible branches (line [0129]). One skilled in the art can appreciate that if the selector can route the selected signal to a number of possible branches, the selector can route the selected signal to a given antenna (horizontal or vertical).

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford does not disclose pilot signals.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word inserter that inserts pilot symbols that are separated by a fixed distance. Wright discloses a channel estimator in the reception side that compares phases using the pilot symbols and outputs these symbols to a channel compensator that adjust the phase accordingly (Col 10 lines 12-39). One skilled in the art can appreciate a pilot inserter inserting the same pilot symbols to different channels.

The combined teachings of Sato, Bickford and Wright do not specifically disclose the first transmitter-receiver further including: signal level detector for comparing signal level received by the first horizontal polarization antenna with signal level received by first vertical polarization antenna each sub-carrier after signals received by both the First antennas are FFT-processed and for determining which one of the signal levels is higher than the other; and means polarization antenna vertical polarization Antenna based on the determination of the signal level detector, so that the data signals for each sub-carrier are transmitted from the selected antenna, which is determined selecting either the first horizontal to have a higher signal level.

Todd discloses the first transmitter-receiver further including: signal level detector for comparing signal level received by the first horizontal polarization antenna with signal level received by first vertical polarization antenna each sub-carrier after signals received by both the first antennas are FFT-processed and for determining which one of the signal levels is higher than the other; and means polarization antenna vertical polarization antenna based on the determination of the signal level detector, so that the data signals for each sub-carrier are transmitted from the selected antenna which is determined selecting either the first horizontal to have a higher signal level (Col 5 lines 42-62 and Col 4 lines 10-40).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3

lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Sato, Bickford and Wright with the diversity selection process as disclosed by Todd. The motivation for this modification is to reduce signal fading and deterioration (Col 1 lines 10-24).

Claim 3 Sato discloses synthesizers (fig 2 elements 41-43) that synthesizes the amplitude or power of each branch and outputs these values to a comparator and selector, and furthermore to a demodulator. The motivation is the same as that for claim 1.

Claim 4 Sato does not disclose the first and second OFDM signals being transmitted from the first horizontal and vertical polarization antennas respectfully being the same signal.

Bickford discloses a signal routing circuitry where a signal is split, one half going to a vertical horizontal antenna and the other half going to a horizontal polarization antenna (Col 3 lines 26-46). The motivation is to take maximum advantage of the available bandwidth with maximum permissible spacing between transmitting and receiving antennas (Col 2 lines 7-11).

Claim 5 Sato discloses synthesizers (fig 2 elements 41-43) that synthesize the amplitude or power of each branch and outputs these values to a comparator and selector. Based on the comparison made in the comparator, the branch with the

maximum synthesized power is selected by the selector (lines [0065-0066]. This frequency spectrum selected is output from the selector to the demodulator (fig 1 element 20). The motivation is a combination of the motivation from claim 1 and 4.

Claim 6 Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. In each branch, Sato discloses a transformer (FFT means) for transforming the signal into the frequency spectrum (Fig 1 elements 7-9 and line [0056]). Sato discloses a synthesizer, comparator and selector for detecting the maximum signal level power/amplitude of the group of branches (lines [0065-0066]). Sato discloses a demodulating means (fig 1 element 20). Sato does not specifically disclose the antennas being a vertical and horizontal polarization antenna and the data signals being divided into groups, and Sato does not specifically disclose pilot signals.

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford discloses a signal routing circuitry where a signal is split, one half going to a vertical horizontal antenna and the other half going to a horizontal polarization antenna (Col 3 lines 26-46). Bickford does not disclose pilot signals.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word

inserter that inserts pilot symbols that are separated by a fixed distance. Wright discloses a channel estimator in the reception side that compares phases using the pilot symbols and outputs these symbols to a channel compensator that adjust the phase accordingly (Col 10 lines 12-39). One skilled in the art can appreciate a pilot inserter inserting the same pilot symbols to different channels or data signal groups.

The combined teachings of Sato, Bickford and Wright do not specifically disclose a signal level detector for determining which one of the both antennas has a higher performance for each sub-carrier frequency based on signal levels of the FFT processed signals.

Todd discloses a signal level detector for determining which one of the both antennas has a higher performance for each sub-carrier frequency based on signal levels of the FFT processed signals (Col 5 lines 42-62 and Col 4 lines 10-40).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas and selector disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5) and select a higher signal level according to a particular polarization antenna. The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Sato, Bickford and Wright with the diversity selection process as

disclosed by Todd. The motivation for this modification is to reduce signal fading and deterioration (Col 1 lines 10-24).

Claim 7 The combined teachings of Sato and Bickford do not teach a first and second common signal inserting means and pilot signal generator. However, Wright discloses a first branch for a first antenna (vertical or horizontal) that contains a pilot word generator (fig 4 element 412) and a pilot inserter (fig 4 element 416).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify, the branches dedicated for a first signal group and a second signal group from the combined teachings of Sato and Bickford, with the pilot generator and inserter as disclosed by Wright. The motivation for this modification is to allow the receiver to estimate the state of each channel accurately (Col 2 lines 5-17).

Claim 8 Sato discloses a distortion compensator (phase adjuster) for each branch that adjusts the phase of the incoming signal (Fig 1 elements 16-18 and line [0085]). Sato also discloses a synthesizer, comparator and selector (fig 2 elements 41-43) for detecting the maximum signal level power/amplitude of the group of branches (lines [0065-0066]). The motivation is the same as that for claim 6.

Claim 12 Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. In each branch, Sato discloses a transformer (FFT processor) for transforming the signal into the frequency spectrum (Fig 1 elements 7-9 and line [0056]). For each branch Sato discloses a distortion compensator (phase adjuster) that adjusts the phase of the incoming signal (Fig 1

elements 16-18 and line [0085]). Sato discloses a demodulator (fig 1 element 20). Sato does not specifically disclose the antennas being a vertical and horizontal polarization antenna, and Sato does not specifically disclose pilot signals.

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford does not disclose pilot signals.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word inserter that inserts pilot symbols that are separated by a fixed distance. Wright discloses a channel estimator in the reception side that compares phases using the pilot symbols and outputs these symbols to a channel compensator that adjust the phase accordingly (Col 10 lines 12-39). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17).

<u>Claim 13</u> Sato discloses a number of first input signals (see fig 2). Sato also discloses a first and second input signal (see fig 2).

Claim 14 Sato discloses synthesizers (fig 2 elements 41-43) that synthesize the amplitude or power of each branch and outputs these values to a comparator and selector. Based on the comparison made in the comparator, the branch with the maximum synthesized power is selected by the selector (lines [0065-0066]. This frequency spectrum selected is output from the selector to the demodulator, where it is then possibly re-modulated and input into a number of possible branches (line [0129]). One skilled in the art can appreciate that if the selector can route the selected signal to a number of possible branches, the selector can route the selected signal to a given antenna (horizontal or vertical).

Sato does not disclose the first and second OFDM signals being transmitted from the first horizontal and vertical polarization antennas respectfully being the same signal.

Bickford discloses a signal routing circuitry where a signal is split, one half going to a vertical horizontal antenna and the other half going to a horizontal polarization antenna (Col 3 lines 26-46). The motivation is to take maximum advantage of the available bandwidth with maximum permissible spacing between transmitting and receiving antennas (Col 2 lines 7-11).

The combined teachings of Sato, Bickford and Wright do not specifically disclose the first transmitter-receiver further including: signal level detector for comparing signal level received by the first horizontal polarization antenna with signal level received by first vertical polarization antenna each sub-carrier after signals received by both the First antennas are FFT-processed and for determining which one of the signal levels is higher than the other; and means polarization antenna vertical polarization

Antenna based on the determination of the signal level detector, so that the data signals for each sub-carrier are transmitted from the selected antenna, which is determined Selecting either the first horizontal to have a higher signal level.

Todd discloses the first transmitter-receiver further including: signal level detector for comparing signal level received by the first horizontal polarization antenna with signal level received by first vertical polarization antenna each sub-carrier after signals received by both the first antennas are FFT-processed and for determining which one of the signal levels is higher than the other; and means polarization antenna vertical polarization antenna based on the determination of the signal level detector, so that the data signals for each sub-carrier are transmitted from the selected antenna which is determined selecting either the first horizontal to have a higher signal level (Col 5 lines 42-62 and Col 4 lines 10-40).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Sato, Bickford and Wright with the diversity selection process as

disclosed by Todd. The motivation for this modification is to reduce signal fading and deterioration (Col 1 lines 10-24).

3. Claims 9, 10, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US Pub No. 2003/0058786) in view of Bickford et al. (US 4083009) in further view of Wright (US 5809083)

<u>Claim 9</u> Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. In each branch, Sato discloses a transformer (FFT processor) for transforming the signal into the frequency spectrum (Fig 1 elements 7-9 and line [0056]). For each branch Sato discloses a distortion compensator (phase adjuster) that adjusts the phase of the incoming signal (Fig 1 elements 16-18 and line [0085]). Sato discloses a demodulator (fig 1 element 20). Sato discloses synthesizers (fig 2 elements 41-43) that synthesize the amplitude or power of each branch. Sato does not specifically disclose the antennas being a vertical and horizontal polarization antenna, and Sato does not specifically disclose pilot signals.

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford does not disclose pilot signals.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word inserter that inserts pilot symbols that are separated by a fixed distance. Wright discloses a channel estimator in the reception side that compares phases using the pilot symbols and outputs these symbols to a channel compensator that adjust the phase

accordingly (Col 10 lines 12-39). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17).

<u>Claim 10</u> Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. Sato does not specifically disclose the antennas being a vertical and horizontal polarization antenna, and Sato does not specifically disclose pilot signals, a pilot signal generator and pilot signal inserter.

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford does not disclose pilot signals, a pilot signal generator and pilot signal inserter.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word inserter (fig 4 element 416) and a pilot word generator (fig 4 element 412) that inserts pilot symbols that are separated by a fixed distance. (Col 10 lines 12-39).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and generator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17).

Claim 11 Sato et al. (Sato 'hereinafter') discloses a diversity receiving apparatus having a number of branches each containing an antenna (Fig 1 elements 1-3 and line [0055]) for the reception of an OFDM signal. In each branch, Sato discloses a transformer (FFT processor) for transforming the signal into the frequency spectrum (Fig 1 elements 7-9 and line [0056]). For each branch Sato discloses a distortion compensator (phase adjuster) that adjusts the phase of the incoming signal (Fig 1 elements 16-18 and line [0085]). Sato discloses a synthesizer, comparator and selector for detecting the maximum signal level power/amplitude of the group of branches (lines [0065-0066]). Sato discloses a demodulator (fig 1 element 20). Sato does not specifically disclose the antennas being a vertical and horizontal polarization antenna, and Sato does not specifically disclose pilot signals.

Bickford et al. (Bickford 'hereinafter') discloses a first transmitter-receiver and a second transmitter-receiver (fig 1 elements 101 a and 101 b). Bickford discloses signals being transmitted and received in both horizontal and vertical polarization antennas (Col 3 lines 60- Col 4line 5 and see abstract). Bickford does not disclose pilot signals.

Wright discloses that transmission and reception of data and pilot signals (see fig 2 and Col 2 lines 5-17). Wright also discloses a transmitter containing a pilot word inserter that inserts pilot symbols that are separated by a fixed distance. Wright discloses a channel estimator in the reception side that compares phases using the pilot symbols and outputs these symbols to a channel compensator that adjust the phase accordingly (Col 10 lines 12-39). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the antennas disclosed by Sato, with the distinct vertical and horizontal polarization antennas as disclosed by Bickford in order to prevent interference between the two transmitted signals as received by the receivers (Col 3 lines 60- Col 4line 5). The motivation to modify the combined teachings of Sato and Bickford with the pilot inserter and channel estimator as disclosed by Wright is to allow the receiver to estimate the state of the channel (Col 2 lines 5-17).

Response to Arguments

4. Applicant's arguments with respect to claims 1, 6, and 11 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed on June 11, 2005 have been fully considered but they are not persuasive.

The applicant argued that the cited art does not disclose the Applicant's claimed "the same OFDM signals are transmitted from both of the horizontal polarization antenna and the vertical polarization antenna".

The examiner maintains that the same limitation, in its broadest term, is already discussed in the rejection of claim 10, wherein Bickford discloses sending half of a serial data stream with a horizontal polarization antenna and a vertical antenna (Col 3 line 39). It would have been obvious to one of the ordinary skill in the art at the time of the invention that each half of the serial data stream is taken from the same OFDM signal.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Nakano (JP Pub. 10-145273) discloses a receiver receiving a horizontal and vertical polarized wave via an antenna. Nakano also discloses a diversity circuit that measures signal strength and outputs the higher signal strength to a receiver.

(b) Plonka (US 6172652) discloses an antenna system for receiving both horizontal and vertical polarization signals. Plonka also discloses a means for phase adjusting and a means for combining both signals.

(c) Fouche et al. (US 6201785) discloses transmitting an OFDM signal via a number of orthogonal channels where each channel is of different polarizations.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Grey whose telephone number is (571) 272-3160. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art unit 2667

Sept 9, 2005

CHI PHAM
SUPERVISORY PATENT EXAMIN
TECHNOLOGY CENTER 26 9/12/05